

AMENDMENTS

Please amend the claims as follows:

1. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property, wherein determining the temperature-dependent property comprises determining an acoustic property of a lens or window of the ultrasound transducer.

2. (previously presented) The method of Claim 1 further comprising:

(d) connecting the ultrasound transducer to an ultrasound imaging system, the connection connecting the at least one transduction element to a receive beamformer channel;

wherein (b) comprises determining the temperature-dependent property with components in the ultrasound imaging system, the received signals being received on connections also used for acoustic imaging signals.

3-8. (cancelled)

9. (currently amended) The method of Claim 1 & further comprising:

(d) transmitting acoustic energy with the ultrasound transducer in response to a transmit beamformer;

wherein receiving the signals comprises receiving echo signals responsive to transmitting the acoustic energy and associated with lens or window depths with a receive beamformer.

10. (currently amended) The method of Claim 1 & wherein (b) comprises:
 - (b1) determining, for each of a plurality of elements including the at least one transduction element, a time-of-arrival of acoustic energy; and
 - (b2) estimating a lens or window acoustic velocity from the times-of-arrival.
11. (currently amended) The method of Claim 1 & wherein (b) comprises:
 - (b1) determining, for each of a plurality of elements including the at least one transduction element, a time-of-arrival of acoustic energy; and
 - (b2) calculating a difference for each time of arrival from a time-of-arrival profile for a known temperature.
12. (withdrawn) The method of Claim 8 wherein (b) comprises determining an amount of attenuation of the lens or window.
13. (original) The method of Claim 1 wherein (c) comprises determining a state above a preset limit.
14. (original) A method of determining a temperature of an ultrasound transducer, the method comprising:
 - (a) connecting elements of the ultrasound transducer to an ultrasound imaging system; and
 - (b) determining a temperature of the ultrasound transducer with components in the ultrasound imaging system, the determining being from signals on connections also used for acoustic imaging signals.
- 15-22. (cancelled)
23. (previously presented) The method of Claim 1 wherein determining the temperature state comprises determining a temperature with components of the ultrasound transducer that are also used for ultrasound imaging.

24. (original) The method of Claim 1 wherein (c) is performed without added devices in the transducer for temperature measurement.

25. (withdrawn) The method of Claim 1 wherein (b) comprises measuring a frequency content of the received signals, wherein (c) comprises determining the temperature state as a function of the frequency content of the received signals.

26. (withdrawn) The method of Claim 25 further comprises:

(d) transmitting a waveform with a frequency that varies as a function of time; wherein (b) comprises measuring a decay in response to (d).

27. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals;

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property; and

~~The method of Claim 1 wherein further comprising:~~

(d) performing (b) for a plurality of locations along a lens or window the transducer;

wherein (c) comprises determining the temperature state as a function of the measurements at the plurality of locations.

28. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property;

~~The method of Claim 1 further comprising transmitting multiple times, wherein receiving the signals comprises receiving the signals in response to the transmitting multiple times associated with multiple firings, and wherein determining the temperature-dependent property comprises determining measuring from a combination of received signals responsive to from the transmitting multiple times firings.~~

29. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property;

~~The method of Claim 1 further comprising transmitting multiple times, wherein receiving the signals comprises receiving the signals at different apertures on the ultrasound transducer, the received signals associated responsive to the transmitting multiple times associated with multiple firings;~~

further comprising:

(d) shifting at least a first one of the received signals relative at least a second one of the received signals;

wherein determining the temperature-dependent property comprises determining measuring from a combination of at least the shifted first received signal and the second received signal.

30-32. (cancelled)

33. (original) The method of Claim 1 further comprising:
(d) initiating a series of actions depending on the temperature state.

34-40. (cancelled)